

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Francis LAU  
Shain-Jer DOONG

Serial No.: 10/780,384

Filing Date: 17 February 2004

Title: HYDROGEN PRODUCTION PROCESS  
FROM CARBONACEOUS MATERIALS  
USING MEMBRANE GASIFIER

Group No.: 1764

Examiner:  
Merkling, Matthew J.

**DECLARATION UNDER 37 CFR 1.132**

Commissioner for Patents  
Alexandria, VA 22313-1450

I, LEONARD G. MARIANOWSKI, do hereby declare as follows:

- 1) I am a Chemical Engineer with B.S. and M.S. degrees from Purdue University. For the past 43 years, I was employed by Gas Technology Institute of Des Plaines, Illinois as a chemical engineer in the field of fuel cells, including the generation of fuels, such as hydrogen, suitable for use in fuel cells. I am one of the inventors listed on U.S. Patent No. 4,810,485.
- 2) I have studied the subject U.S. patent application in which a permeable hydrogen-selective membrane is disposed within a solid carbonaceous material reactor vessel between a reaction zone in which solid carbonaceous materials are reacted to produce a product gas containing hydrogen and a zone in which hydrogen passing

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through the membrane is collected and I am familiar with the concept of the invention claimed therein.

4) I have also studied the final Office Action mailed 26 October 2007 wherein the subject patent application is rejected on the basis of U.S. Patent No. 4,810,485, which patent the Examiner avers teaches a solid carbonaceous material reactor vessel, i.e. a coal, peat or shale gasification reactors, containing a permeable hydrogen-selective membrane separating a reaction zone in which a product gas is produced and a hydrogen-rich zone in which hydrogen passing through the membrane is collected on the basis of a statement made therein, i.e. "Hydrogen forming reactions particularly suited for this invention are....carbonaceous material gasification reactions, such as gasification of coal, peat, and shale."

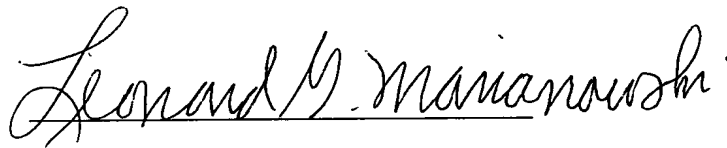
5) The statement cited by the Examiner is to be interpreted as merely identifying solid carbonaceous material gasification reactions as sources for hydrogen-containing gas mixtures for feeding into the reactor vessel described in the patent as opposed to the carrying out of solid carbonaceous material gasification reactions within the reactor vessel described in the patent.

6) The reactor vessel shown in Fig. 3 of U.S. Patent No. 4,810,485 can only process gaseous mixtures and is not able nor intended to gasify solid carbonaceous materials, such as coal, peat and shale, because the introduction of such solid

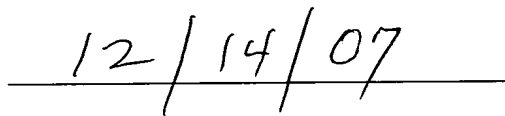
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materials into the reactor vessel will plug the catalytic packed bed, rendering the reactor vessel inoperative.

I further declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

A handwritten signature in cursive script, reading "Leonard G. Marianowski", written over a horizontal line.

Leonard G. Marianowski

A handwritten date "12/14/07" written in a simple, bold style over a horizontal line.

Date